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Whose (Partially Distributed) Team Are You On? Interviews About "Us vs. Them" in Corporate Settings

Robin Privman
New Jersey Institute of Technology, fp3@njit.edu

Starr Roxanne Hiltz
New Jersey Institute of Technology, roxanne.hiltz@gmail.com

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Robin Privman
New Jersey Institute of Technology
fp3@njit.edu

Starr Roxanne Hiltz
New Jersey Institute of Technology
hiltz@njit.edu

ABSTRACT

This study explores, through semi-structured interviews, team member perceptions of effectiveness in Partially Distributed Team work. A partially distributed team (PDT) is a virtual team, in which some members are collocated, yet others are geographically dispersed, and communication between them is primarily by electronic media. Researchers have identified an overarching problem in partially distributed teams, referred to as "Us-vs.-Them", where members identify and collaborate better with collocated members than they do with distant members. We asked fourteen industry professionals to reflect on recent PDT experiences, in an attempt to find out what exacerbated and mitigated this problem. We confirmed prior findings such as importance of relationship building between members and salience of organizational influences, especially organizational culture and power distribution. We discuss additional findings based on team members' insight, to help transform the "Us-vs.-Them" in-group/ out-group dynamics into an "Us" team cohesion.

Keywords

Partially distributed teams, collaboration, computer mediated communication, asynchronous systems.

INTRODUCTION

Partially distributed teams are increasingly prevalent in organizations today. Corporations are asking their employees to work effectively across distance, depending on new innovations in communication technology to tie everyone together (Armstrong and Cole, 2002). A majority of research on distributed team work has focused on virtual settings, where all members are dispersed. Partially distributed teams, however, differ from fully virtual teams in that sub groups are collocated and can collaborate face to face. Such dynamics facilitates development of relationships and identities within collocated sub-groups while leading to more extreme between-group problems (Huang and Ocker, 2006; Armstrong and Cole, 2002)

Research specific to partially distributed teams, that provided the theoretical background for our study, is dominated by case studies in global settings (e.g.,: Espinosa and Pickering, 2006), and empirical findings with student teams (e.g.,: Huang and Ocker, 2006). While prior research measured team effectiveness and performance, our goal is to specifically focus on between group dynamics in PDTs, termed: 'Us-vs.-Them'. It is very important to understand this phenomenon in order to be able to reduce it, thereby increasing PDT cohesiveness. In this paper we report corporate employees' views to better understand how "Us-vs.-Them" manifests itself in a wide array of partially distributed teams. The research questions we consider are:

1) What PDT settings exacerbate "Us-vs.-Them"? And what settings mitigate it?
2) How do PDT members use technology to reduce "Us-vs.-Them"?
3) What policies help moderate "Us-vs.-Them"?

The sections below focus on each of these aspects: setting, technology, and policies. Following a literature review, we describe our methodology, and discuss findings, conclusions, and further research directions.

RESEARCH LITERATURE REVIEW

Setting

In virtual team research, team setting is not emphasized. All we know is that team members are not co-located. The lack of face to face contact that follows entails a set of problems, such as: difficulty judging remote member trustworthiness (McDonough, Kahnb, and Barczaka, 2001); errors in attributing the causes of events (Crampton, 2002); and problems maintaining ties among distant team members (Armstrong and Cole, 2002). In partially distributed teams, however, co-

located members are able to communicate informally and build friendships and trust as in traditional teams. Drawing on virtual team research we study how to extend such relationship building to encompass distant members of partially distributed teams.

As stated above one advantage that a co-located sub-team, in a partially distributed team, has is informal social communication. Such communication was found very useful for relationship building (Jarvenpaa and Leidner, 1999, Cascio and Shurygailo, 2002). In fact virtual teams that spent time initially engaging in such social communication, through travel to a common location, had better performance (Lings, Lundell, Agerfalk, and Fitzgerald, 2006).

While informal communication strengthens ties within a sub-group, it creates a divide between distant sub-groups. Some problems that have been identified between distant sub-groups are: in-group team dynamics (Huang and Ocker, 2006), described as increased preferential interaction within a sub-team and increased conflict between sub-teams; an assumption by dispersed team members that co-located members are talking and sharing information that is not communicated to them (Sarker and Sahay, 2002); and perception of preferential treatment of the distant sub-group (Huang and Ocker, 2006).

While the geographic divide is strong, it is not the only "faultline" dividing PDTs. Lau and Murningham (2005) defined faultlines as boundaries upon which sub-teams are formed, including organizational culture (Armstrong and Cole, 2002). In fact a strong and uniform organizational culture was found to mitigate the geographical divide in partially distributed teams (Chudoba, Wynn, Liu, and Watson-Manheim, 2005). Organizational culture discontinuity, on the other hand, had a negative impact on partially distributed teams, especially when there was an uneven power distribution such as when a sub-group has parent company affiliation (Polzer et. al 2006), or when a sub-group works in a satellite location (Huang and Ocker 2006).

To address problems between sub groups, researchers suggest team building activities through face to face or teleconferencing (Kayworth and Leidner, 2000; Zigurs, 2002). Especially exchanging social information early in the project, even through electronic means, has been found beneficial for building team cohesion and trust (Jarvenpaa and Leidner, 1999). Polzner, Jarenpaa, and Kim (2006), encourage managers to promote team identification and performance rather than sub-group identification. A more extreme measure, recommended by some researchers, is temporarily collocating team members at the start of the project (Lings et. al. 2006). In addition to early social interaction, reducing the divide between sub-groups in partially distributed teams lies in technology, policies, leadership, and training, as discussed in the following sections.

Technology

Technology embeds distributed team work; and consequently has been an important dimension in virtual team models (McDonough III et al, 2001). Pauleen and Yoong, (2001) studied when and why what type of technology is used and concluded that it depended on organizational and cultural factors. They reported that video conferencing might be a good, cost-effective alternative to face-to-face meetings for building team relationships. Audio teleconferencing was also reported to enhance communication (Lings et al., 2006)

Some of the challenges partially distributed teams face that relate to technology were examined by Polzer et. al (2006). They found that a lack of a shared knowledge-base among distant team members resulted from unevenly distributed information, difficulty understanding the importance of information to various team members, and difficulty interpreting silence or lack of reply. When collocated subgroups relied increasingly on face-to-face meetings which could not include distributed team members, the awareness of differences between sub-groups was heightened.

Selecting appropriate communication media can actually facilitate better communication and work outcomes than traditional face to face outcomes. Benbunan-Fich and Hiltz (1999) conducted a field experiment comparing FTF and online asynchronous teams. They found that online discussions were broader than exchanges in unsupported FTF meetings. As a result asynchronous teams were able to submit better and more complete reports than those submitted by manual groups. In addition, online group members reported better perceived learning. McDonough III et al. (2001) found that for those who had a different native tongue, written communication caused fewer misunderstandings than oral communication. In addition, when asynchronous means of communication are used, such as email, team members tend to send more information than they would in a real-time interaction because the lack of interactivity creates a risk that information would be discarded inadvertently.

Some general recommendations for partially distributed teams are that local teams use the tools that they are most accustomed to. Researchers also see value in a project home web site, with team member information, schedules, status reports, etc. (Lings et al., 2006). To promote task-technology fit, teams are encouraged to use a variety of communication media so that technology use is matched to task requirements (Maznevski and Chudoba, 2001).

Policies

Researchers found that more structure is required for partially distributed teams and that roles in such teams must be explicit (Armstrong and Cole, 2002; Espinosa and Carmel, 2003). Additional examples are: explicitly make clear the time zone used for posted meeting times (Kayworth and Leidner, 2000); set up regular synchronous meetings and status reports (Lings et al. 2006); and establish electronic availability during work hours (Cascio and Shurygailo, 2002). Such electronic availability along with frequent feedback was especially recommended for leaders of partially distributed teams (Zigurs 2002).

In global teams where synchronous communication is especially difficult, Espinosa and Carmel (2003) advocated creating formal structures for messages and activities so as to reduce the need for communication for clarification. They also suggested synchronous techniques that increase the ability for distributed members to communicate in real time. For example, teams may alter the work day schedule so that there is more overlapping time, and focus on non-interdependent tasks during non-overlapping time. Espinosa and Pickering (2006) suggested further actions that can be taken to improve effectiveness for global teams such as assigning a contact person at each site to coordinate with other sites. They also recommended that coordination procedures be established from the start, and that meeting times be rotated so that no one team is required to always meet during their off-work hours. Finally, they reiterated that tasks be broken into modules so that dependencies between sites are reduced whenever possible.

METHODS

Semi structured interview questions were based on the literature review above and on a large scale student study by Ocker et. al. (In progress), where students from three universities work together as a partially distributed team to complete a course project. We identified interview participants though personal network referral. Individuals from various industries were selected to increase the validity of results. The project length and team composition were not restricted in this study, as long as one of the locations had more than one person. The last condition allowed us to study between group dynamics of at least two distinct collocated sub-groups, for 'Us-vs.-Them' indication. Geographic, time zone, and cultural diversity were not controlled when selecting participants. Perceptions of leaders as well as team members were sought.

Each candidate was asked to describe one or more recent Partially Distributed Team experiences in a pre-interview session. A suitable PDT experience for this study was defined as IT related and fairly recent (because of technology advancement considerations). When a suitable PDT experience was identified, its structure was diagrammed (see examples in Figure 1). We went through several improvement iterations of the instrument based on six pilot interviews. The pilot interview instrument was incrementally adjusted for reasonable timing, clear terminology, and most importantly to focus specifically on the dynamics between geographically dispersed groups. In this paper we report on fourteen interviews with the final instrument that took an average of 45 minutes each to conduct.

We attempted to focus on 'Us-vs.-Them' as a dependent variable so that findings can be related to its reduction / escalation. To achieve this effect, project outcomes were not discussed and interviewees were reminded to focus on 'between sub-group' relationships in each section. The interviews were recorded, transcribed, and coded by the first author using NVIVO software. Teams with in-group / out-group dynamics were identified based on interviewee references to any of the associated problems described in literature. Some examples are misunderstandings; weak social integration, mistrust; lack of shared identity; blame; misattribution; out-of-sight / out-of-mind; uncertainty of motives; reluctance to approach for help; as well as perception of distant team not carrying its weight, having an advantage, or withholding information.

From the literature review we came up with five categories for interview questions: setting, technology, policy, leadership, and training. Interview comments were mapped to these categories when possible.. We report on setting, technology, and policy findings in the next section.

FINDINGS

Setting

The teams were not restricted beyond exclusion of fully virtual or fully co-located teams, and so they ranged widely in composition. Figure 1 shows an example of two teams and their geographic distribution.

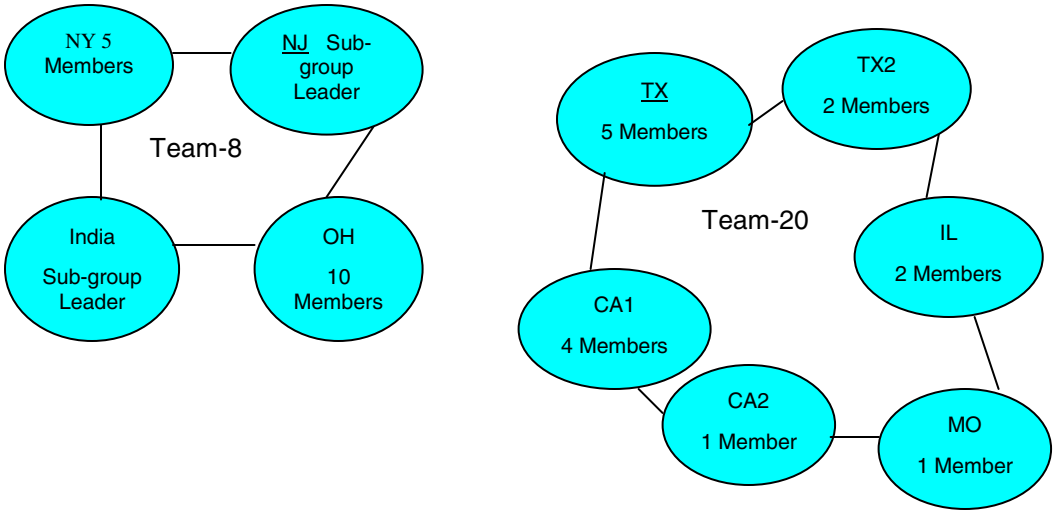

Figure 1. Two Examples of Configuration

Table 1 summarizes important team characteristics. In the table, distribution is ranked high if at least three sub-teams exist and low otherwise. Time zone difference is ranked low for within the U.S and High globally. The distribution tuple shows how many members are in each sub-team. "Us-vs.-Them" is classified as "Yes" if the interviewee mentioned any "Us-vs.-Them" problem as elaborated on in the Methods section.

Participant Role	Team	Distribution Tuple (Location:Members)	Distribution	Global Presence	Time Zone Diff.	Team Size	Us-vs.-Them?
Member	7	(NJ:16,India:1)	Low	Yes	High	17	No
Leader	8	(NJ:1,NY:5,India:1,OH:10)	High	Yes	High	17	Yes
Member	9	(NY:3, London:3)	Low	Yes	High	6	Yes
Leader	10	(NJ:6,KS:4, NJ:4, NJ:1)	High	No		15	Yes
Member	11	(NY:1, NY:2, NY:1)	High	No		4	Yes
Leader	12	(NJ:1, Israel:4)	Low	Yes	High	5	No
Leader	13	(NY:1,PA:10, MN:2)	High	No		13	Yes
Leader	14	(NJ:4, NJ:2)	Low	No		6	Yes
Member	15	(NJ:8,NJ:21,TX:6, NJ:6)	High	No	Low	41	Yes
Leader	16	(NJ:6,NJ:1,OH:20, NJ:11)	High	No		38	Yes
Member	17	(NJ:13, AZ:20)	Low	No		33	No
Member	18	(NY:1, NY:2, NY:1)	High	No		4	No
Member	19	(NJ:2, NJ:3)	Low	No		5	Yes
Leader	20	(TX:6,CA:4,CA:1, TX:1, MO:2, IL:2)	High	No	Low	16	Yes

Table 1. Team Characteristics

As evident in this table and tested by Chi Square, there was no correlation between the geographic distribution of teams and 'Us-vs.-Them'. So what were the most important factors influencing 'Us-vs.-Them'? Below are some quotes, from team members who reported 'Us-vs.-Them', that can guide us.

> *"A Major conflict is between my co-worker in London and my co-worker in NY. They have a tendency to assign blame. They both say: 'your component is down – try that and that.' They try to shift work back and forth. It's not that work does not get done, it's just that it's not very pleasant between the two of them.*" (Id 9)

Assigning blame, misattribution, and 'out-of-sight / out-of-mind', scenarios were apparent in teams where the 'Us-vs.-them' problem existed.

> "*Knowing people in person leads to being more comfortable about reaching out, so that geographic divides become smaller.*" (Id 11)

We found overwhelming support, in accordance with literature, that lack of social relationships between distant team members contributes to 'Us-vs.-Them'. Sommerville (2001) pegged social needs of IT professionals using Maslow's Hierarchy, arguing that IT professionals are not usually hungry and generally don't feel physically threatened. Therefore ensuring social satisfaction is significant for them.

> "*The teams came together after an acquisition. There was an issue where they've identified with their original organization, which was reinforced by distance so there were overall problems."* (Id 20)

We found unanimous support for the importance of organizational factors with a total of 26 comments from interviewees. When two sub-teams had similar ethics, priorities, expectations, and attitudes towards work, things went well, and visa versa. A situation that kept surfacing was re-organization, whether internal or via mergers. Often two or more organizations were merged into one, and when teams from previously different organizations needed to work together, confusion about roles and problems with priorities and expectations ensued, greatly contributing to 'Us-vs.-Them'.

> "*Whoever is at the headquarters seems to have an advantage and the satellite location is alienated. You have to create an environment where, if the team does well, everyone benefits*."(Id 10)

Three interviewees worked in satellite locations, and reported that the set-up contributed to 'Us-vs.-Them'

> "*The geographical disconnect with India was difficult. At 11 am he was not available for the rest of the day. The team made assumptions because they did not have someone to go to right away and they needed to get things done. The availability in different time zones is key. A two hour difference was o.k.; we had clear expectations. The person was flexible. He did not mind working a bit later to keep up with the time zone." (Id 8)*

Six of the teams studied were working across time zones. This temporal difference was discussed by each except for one team (#15) where the time difference was only 2 hours. Three of the five teams stated that time zone negatively affected work. As evident by participant 8's discussion, when team members make a conscious effort to work around time zone differences, all goes well. Otherwise, the 'Us-vs.-Them' problem is heightened.

> "*Sometimes there is some tension because it's not clear who is doing what.*" (Id 16)

Unclear Roles contributed to 'Us-vs.-them' as well. In most cases re-organization was the culprit. Sub-team role conflict was evident when two organizations that were responsible for similar functions were suddenly merged into a partially distributed team and were expected to work together.

> *"Things seem to drag out more. I had a lot of instances where I'm sitting there doing the work and if I could just get up from my desk and ask a question I'd have better direction. But I don't always feel like calling because I don't know if the person is there or the other team might be occupied so I do what I think I should be doing and it turns out that it's not what was meant to happen and so time was wasted and frustration on both sides ensues*." (Id 11)

Difficulty communicating synchronously is an inherent reality of distributed teams. It was mentioned by all interviewees that reported an 'Us-vs.-Them' problem.

These selected comments provided an insight into contributing factors, as summarized in table 2.

Us-vs.-Them	
Organizational	15
Unclear Roles	10
Synchronous unavailability	9
Out Of Sight	9
Misattribution and blame	8
Lack in relationships	5

Table 2. Us-vs.-Them Comment distribution

An important mission of our study was to solicit people's suggestions for improvement and good practices. We've examined comments from team members where 'Us-vs.-Them' did not exist, to start formulating recommendations:

> *"In my company we are very results oriented." (Id 17)*

Participant 17 reported a strong uniform organizational culture, where PDT work was the norm and professionalism and results were emphasized.

> "*There was a natural allocation of functions*" (Id 12)

Participant 12 belonged to a small team where the roles were very clear.

In addition to what we learned from teams without 'Us-vs.-Them', we solicited improvement suggestions from the other interviewees. Table 3 summarizes the overall recommendations we gathered.

Improvement Category	Comments
Socializing / Team Building	15
Project Management	13
Improved Technology Use	8

Table 3. Improvement Comments

In the Socializing and Team Building arena, there was a general agreement that there is no substitute for face to face activities. However, an important component of this study was to solicit suggestions for face-to-face substitutes. Questions were posed about the feasibility of on-line team building activities, including on-line games. Only participant 9 was very enthusiastic about on-line games as a team building activity. Note that participant 9 is at least 10 years younger than all other participants. A specific study of effectiveness of on-line games should be repeated with a more diverse age range. The rest of the participants ranged between thinking that on-line team building is a waste of time to being willing to try it.

Online activities for people to get to know each other need to be tested in case studies. Perhaps using focus groups to discuss best features and practices would be helpful. Project management improvement recommendations called for clear delineation of responsibilities, role clarification, and policies. These will be discussed in the policies section. Technology results will be discussed next.

Technology

The technologies that dominated participant discussions in our interviews were email, phone, audio-conference, video conference, project repositories, project management software, and IM. Collaborative file sharing and editing was also mentioned as important and schedule sharing with meeting set up features was deemed helpful.

There was a general consensus among participants that people in PDTs should use any communication means that they are comfortable with:

> "*The easier you make it to communicate the more people will communicate. Give them as many tools as possible to reach out more readily." (*Id 20)

Table 4 shows some results. We'll focus on IM, Audio-Teleconference, Video-Conference, and Wikis in more detail below. We will discuss effective and ineffective features of these tools as well as improvement ideas.

Technology	Use	Positive	Negative
IM	7	10	1
Video-Conference	2	9	1
Audio-Teleconference	14	6	6
Project Wiki	2	5	3

Table 4. Technology Comments

IM

Cho, Trier, and Kim (2005), in a case study, examined how Instant Messaging systems help employees of an organization improve their relationships with co-workers within and across departments. Among our interviewees, IM was viewed as informal and immediate, and was perceived as fostering relationships between remote sub-teams, thereby reducing 'Us-vs.Them':

> *"I made the most use of technology by installing an IM package. So that they can see: I'm on-line! I'm available! And so that they can say: 'Hey – you've got a minute?' Instead of wondering: let me give his number a call – maybe he is there? (Id 8)*

> *"To me IM is the preferred method. I have chats over the IM with my co-worker in London. We've developed a friendship." (Id 9)*

Audio-Teleconference

Teleconferencing was used by all groups and viewed as an integral component of PDT work:

> "*The most common tool we use is teleconference. It's very convenient now because you have a reserved number that you can use anytime*." (Id 16)

The negative comments about teleconferencing had to do more with the way they were conducted:

> "*Many people join and it becomes a show and tell instead of a collaborative session." (Id 14)*

"*I think that when you conference call with 20 people you may have no one paying attention*." (Id 10)

Suggestions for improvement focused on letting people work together between teams and communicate on a more personal level:

"Let specific people work together across boundaries not as teams" (Id 10)

As evident by participant perception, full team conference calls inhibit between group integration. Individuals tend to 'get-lost' in the larger team and a sub-team 'show-and-tell' situation occurs, where individuals are aligned with their subgroups. To reduce 'Us-vs.-Them', participants suggested letting smaller numbers of individuals from each sub-group meet together via teleconference.

Video Conference

Video Conferencing was rarely used. However, people liked the idea and in fact some felt that it would mitigate conference call deficiencies:

"Everything through a computer seems too formal or informal or has the wrong tone. Through a computer you don't have to be too nice. You can say things that are mean and then walk away from your desk and forget about it. Webcam capabilities would help a lot." (Id 13)

Project Wiki

Researchers recommend project repositories for communication and information sharing. About a third of participants reported using such repositories. Another third saw value in them:

"A project wiki or shared points or repositories would be very helpful." (Id 20)

The rest were not big fans:

"*I don't know if a repository is really practical because everything has a million versions. So how do you know what you need to put on the repository*?" (Id 11)

Although wikis were not terribly frowned upon by anyone, they simply were not viewed as appropriate for all situations. Further case studies introducing wikis into organizations and studying the features that PDT members prefer can be useful.

4.2.5 Technology Learning

There was some discrepancy between use and perceived usefulness. For example, video-conferencing was rarely used while it was perceived as useful, while audio-teleconferencing was frequently used with many reported problems. This situation lends itself to many case studies and technology improvements.

Policies

Although PDTs can benefit from policies and guidelines, according to research, we found that most policies in industry PDTs are of an informal nature. They are set by discussions or common understandings, not as a contract:

"*Especially because we were working across different organizations we had explicit discussion on response time on work items*." (Id 10)

A prevalent policy that was enforced was a regularly scheduled conference call meeting. It served for many purposes, such as establishing an informal deadline to 'show work' at the meeting, and making sure that everyone is on the same page:

"We did institute a weekly meeting. The meeting also established a deadline." (Id 14)

Some behaviors are simply expected, such as a reasonable response time to an inquiry:

> *"Is setting up a response max time needed? No. It's common sense. If you have to get to that level, you are compensating for people not being reasonable." (Id 8)*

Although in some organizations, policies are of a more structured nature:

> *"We have a lot of processes where people need to respond in a certain time." (Id 17)*

Table 5 examines the relationship of formal policies to 'Us-vs.-Them'. There is a suggestion that having formal policies is associated with lack of in-group dynamics, but the number of interviewees is too small and there is no statistical significance for this data. The need for formal vs. implicit policies warrants further research.

Team	Distribution	Formal Policies	Us Vs. Them?
18	High	No	No
12	Low	No	No
17	High	Yes	No
7	Low	Yes	No
11	High	No	Yes
10	High	No	Yes
15	High	No	Yes
13	High	No	Yes
9	Low	No	Yes
14	Low	No	Yes
19	Low	No	Yes
8	High	Yes	Yes
16	High	Yes	Yes
20	High	Yes	Yes

Table 5. Policies

CONCLUSIONS

Many prior research findings were corroborated in this study, such as the salience of organizational traits, importance of social presence, faultline effects, and the need for more structure in distributed work. Insights into how members use different technologies were uncovered that warrant further research. A major contribution of this study lies in the isolation of the 'Us-vs.-Them' between group dynamics specific to PDT settings, as a measure, in an attempt to map-out a path to its reduction.

Based on our findings, fully distributed team research findings and collocated team relations apply to PSTs in many cases. However, looking through a lens at the 'Us-vs.-Them' PDT problem, in particular, we discern the following possible strategies for lessening it:

- Team building and increase in social interaction
- Fostering of collaboration between specific individuals from distributed sub-teams, rather than collaboration between sub-teams as units (ie: leader to leader communication only, large show and tell style conference calls).
- Uniform organizational culture
- Uniform power distribution
- Clear roles and responsibilities
- Flexibility to accommodate time zone differences
- Video Conferencing
- IM

This study has limitations such as lack of inter coder reliability and a small sample. Glimpses into varied teams from the members' perspectives, however, have provided insight that can springboard more extensive research.

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REFERENCES

1. Armstrong, D. J., and Cole, P. (2002) Managing Distance and Differences in Geographically Distributed Work Groups. In P. Hinds, and S. Kiesler (Eds.), *Distributed Work*, Cambridge, MA: The MIT Press, 167-186.

2. Benbunan-Fich, R., Hiltz, R., S., (1999) Effects of Asynchronous Learning Networks: A Field Experiment, *Group Decision and Negotiation*, 8, 409-426

3. Cascio, W. F. and Shurygailo, S. (2002) E-Leadership and Virtual Teams, *Organizational Dynamics,* 31**,** 4**,** pp. 362-376.

4. Cho, H., Trier, M., Kim, E. (2005) The Use of Instant Messaging in Working Relationships Development: A Case Study. *Journal of Computer Mediated Communication*, 10, 4, article 17

5. Chudoba**,** K. M., Wynn, E., Liu, M. and Watson-Manheim, M. B. (2005) How virtual are we? Measuring Virtuality and understanding its impact in a global organization, Information Systems Journal, 15, pp. 279 – 306.

6. Cramton, C. D. (2002) Attributions in Distributed Work Groups. In Distributed Work, P. Hinds, and S. Kiesler (Eds.), Cambridge, MA: The MIT Press, 191-211

7. Daft, R. L. and Lengel, R. H. (1986) Organizational information requirements, media richness and structural design, *Management Science,* 32**,** 5**,** 554-571.

8. Espinosa, J. A. and Carmel, E. (2003) The Impact of Time Separation on Coordination in Global Software Teams: a Conceptual Foundation, *Software Process Improvement and Practice,* 8**,** 249-266.

9. Espinosa, J. A. and Pickering, C. (2006) The Effect of Time Separation on Coordination Processes and Outcomes: A Case Study in *39th Hawaii International Conference on System Sciences* Hawaii.

10. Huang, H. and Ocker, R. (2006) Preliminary Insights into the In-Group/Out-Group Effect in Partially Distributed Teams: An Analysis of Participant Reflections in *SIGMIS-CPR '06* Claremont, California.

11. Jarvenpaa, S. L. and Leidner, D. E. (1999) Communication and trust in global virtual teams, *Organization Science,* 10**,** 6**,** 791.

12. Kayworth, T. R. and Leidner, D. E. (2000) The global virtual manager: a prescription for success, *European Management Journal,* 18**,** 2**,** pp. 183-194.

13. Lau, D. C. and Murnighan, J. K. (2005) Interactions within Groups and Subgroups: The Effects of Demographic Faultlines, *Academy of Management Journal,* 48**,** 4**,** 645-659.

14. Lings, B., Lundell, B., Agerfalk, P. J. and Fitzgerald, B. (2006) Ten Strategies for Successful Distributed Development in *IFIP WG8.6 Working Conference* National University of Ireland, Galway.

15. Maznevski, M. L. and Chudoba, K. M. (2000) Global virtual team dynamics and effectiveness, *Organization Science,* 11**,** 5**.**

16. McDonough III, E. F., Kahnb, K. B. and Barczaka, G. (2001) An investigation of the use of global, virtual, and collocated new product development teams, *Journal of Product Innovation Management,* 18**,** 2**,** 110-120.

17. Ocker, R., Rosson, M.B., and Hiltz, S.R. (in progress) Enhancing the Effectiveness of Partially Distributed Teams: Pilot Studies on Distance and Leadership. Proposal to the National Science Foundation.

18. Pauleen, D. J. and Yoong, P. (2001) Relationship building and the use of ICT in boundary-crossing virtual teams: a facilitator's perspective, *Journal of Information Technology,* 16**,** 205-220.

19. Polzer, J. T., Crisp, B., Jarenpaa, S. L. and Kim, J. W. (2006) Extending the Faultine Model to Geographically Dispersed Teams: How Colocated Subgroups Can Impair Group Functioning, *Academy of Management Journal,* 49**,** 4**,** 679-692.

20. Sarker, S., Sahay, S. (2002) Information Systems Development by US-Norwegian Virtual Teams: Implications of time and space. *Proceedings of the 35th Hawaii International Conference on System Sciences.*

21. Sommerville, I. (2001) Software Engineering, 6th Edition, Addison-Wesley Inc. Essex, England.

22. Zigurs, I. (2002) Leadership in Virtual Teams: Oxymoron or Opportunity?, *Organizational Dynamics,* 31**,** 4**,** pp. 339-351.